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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/648,122 | 08/25/2003 | Laura Kramer | 200310701-1 | 3205 |

22879 7590 03/18/2005

HEWLETT PACKARD COMPANY
P O BOX 272400, 3404 E. HARMONY ROAD
INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400

EXAMINER

KASENGE, CHARLES R

| | |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
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2125

DATE MAILED: 03/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/648,122 | KRAMER ET AL. | |
| | Examiner | Art Unit | |
| | Charles R Kasenge | 2125 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-49 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-49 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 8/25/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-49 are rejected under 35 U.S.C. 102(b) as being anticipated by Liu et al. U.S. Patent 6,376,148. Referring to claims 1 and 44, Liu discloses a method for creating a three-dimensional solid freeform fabrication object with non-reactive powder (col. 6, lines 20-35) comprising: spreading a non-reactive powder on a substrate (col. 5, lines 35-50); selectively dispensing a reactive resin onto said non-reactive powder, forming a mixture of reactive resin and non-reactive powder, wherein said mixture defines said three-dimensional object (col. 7 and 8, lines 61-67 and 1-8); and curing said reactive resin thereby encapsulating said non-reactive powder (col. 6, lines 20-35).

Referring to claims 2-8, 40, 41, and 48, Liu discloses the method of claim 1, further comprising heating said reactive resin to a temperature of about 40 to 200 degrees Celsius (C.) (col. 25, lines 53-57). Liu discloses the method of claim 1, further comprising applying ultrasonic energy to said mixture of reactive resin and non-reactive powder (col. 17, lines 39-56). Liu discloses the method of claim 1, further comprising adding color to said reactive resin (col. 9, lines 5-13). Liu discloses the method of claim 1, wherein said reactive resin comprises a one-part reactive resin (col. 6, lines 20-35). Liu discloses the method of claim 5, wherein said one-part reactive resin comprises an ultraviolet (UV) curable resin (col. 6, lines 20-35). Liu discloses

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the method of claim 6, wherein said curing comprises applying UV radiation to said reactive resin (col. 6, lines 20-35). Liu discloses the method of claim 7, wherein said dispensing comprises selectively depositing a quantity of said one part reactive resin onto said non-reactive powder (col. 16, lines 16-22).

Referring to claims 9-15, Liu discloses the method of claim 1, wherein said reactive resin comprises a two-part reactive resin including a reactive build material and a curing agent (col. 7 and 8, lines 61-67 and 1-8). Liu discloses the method of claim 9, wherein said dispensing comprises: dispensing a layer of said reactive build material (col. 7 and 8, lines 61-67 and 1-8); and dispensing a layer of said curing agent (col. 7 and 8, lines 61-67 and 1-8). Liu discloses the method of claim 9, wherein said dispensing comprises simultaneously dispensing said reactive build material and said curing agent (col. 7 and 8, lines 61-67 and 1-8). Liu discloses the method of claim 9, wherein: said reactive build material comprises an epoxy (col. 11, lines 35-46); and said curing agent comprises a material from one of an amino group, a hydroxyl group, or a carboxyl group (col. 18, lines 33-53). Liu discloses the method of claim 9, wherein: said reactive build material comprises a polyisocyanate (col. 18, lines 33-53); and said curing agent comprises a polyol (col. 18, lines 33-53). Liu discloses the method of claim 9, wherein: said reactive build material comprises a functionalized silicone (col. 19, lines 1-14); and said curing agent is configured to react with a functional group on said silicone (col. 19, lines 1-14). Liu discloses the method of claim 9, wherein: said reactive build material comprises prepolymers with unsaturated functionality (col. 8, lines 26-31); and said curing agent comprises a free-radical cure curing agent (col. 17 and 18, lines 57-67 and 1-3).

Referring to claims 16-23, 42, 43, and 49, Liu discloses the method of claim 1, wherein

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said reactive resin comprises a two-part UV curable resin including a UV initiator and a build material (col. 17, lines 38-56). Liu discloses the method of claim 16, wherein said selectively dispensing comprises: dispensing a layer of build material on said non-reactive powder (col. 17, lines 38-56); and dispensing a layer of said UV initiator (col. 17, lines 38-56). Liu discloses the method of claim 16, wherein said selectively dispensing comprises simultaneously dispensing said build material and said UV initiator (col. 17, lines 38-56). Liu discloses the method of claim 16, wherein said UV initiator is dissolved in a solvent (col. 17 and 18, lines 57-67 and 1-7). Liu discloses the method of claim 19, wherein said solvent comprises a monofunctional monomer (col. 17 and 18, lines 57-67 and 1-7). Liu discloses the method of claim 16, wherein said build material comprises one of an acrylic compound, a compound having an epoxy substituent, a vinyl ether substituent, vinylcaprolactam, vinylpyrrolidone, or urethanes (col. 17 and 18, lines 57-67 and 1-7). Liu discloses the method of claim 16, wherein said UV initiator comprises one of a free radical initiator or a cationic initiator (col. 17 and 18, lines 57-67 and 1-7). Liu discloses the method of claim 1, wherein said non-reactive powder comprises one of silica particles, glass spheres, metal powders, polymer powders, ceramic powders, or magnetic powders (col. 18, lines 33-42).

Referring to claims 24, 30, 36, and 37, Liu discloses a solid freeform fabrication system for producing a three-dimensional object using non-reactive powder comprising: a powder spreading system configured to spread a specified quantity of non-reactive powder (col. 16, lines 16-22); a dispensing system adapted to selectively dispense a reactive resin onto said non-reactive powder (col. 7 and 8, lines 61-67 and 1-8); a curing system configured to cure said

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reactive resin (col. 6, lines 20-35); and a computing device coupled to and configured to control said dispensing system and said curing system (col. 1, lines 6-13).

Referring to claims 25-29, 31-33, 38, and 47, Liu discloses the solid freeform fabrication system of claim 24, wherein said powder spreading system comprises a mechanical roller (col. 14, lines 1-5). Liu discloses the solid freeform fabrication system of claim 25, wherein said mechanical roller is configured to planarize and pack a quantity of said non-reactive powder (col. 14, lines 1-5). Liu discloses the solid freeform fabrication system of claim 24, wherein said dispensing system comprises an inkjet dispenser (col. 1, lines 56-67). Liu discloses the solid freeform fabrication system of claim 27, wherein said inkjet dispenser comprises one of a thermal inkjet dispenser, a continuous inkjet dispenser, or a piezoelectric inkjet dispenser (col. 6 and 7, lines 63-67 and 1-3). Liu discloses the solid freeform fabrication system of claim 27, wherein said inkjet dispenser comprises a plurality of ejection orifices configured to selectively eject parts of a two-part reactive resin (col. 1, lines 56-67).

Referring to claims 30, 34, 35, and 39, Liu discloses a solid freeform fabrication system for producing a three-dimensional object using non-reactive powder comprising: spreading means for spreading said non-reactive powder (col. 14, lines 1-5); dispensing means for dispensing a reactive resin onto said non-reactive powder (col. 7 and 8, lines 61-67 and 1-8); curing means for curing said reactive resin (col. 6, lines 20-35); and controlling means for controlling said spreading means, said dispensing means, and said curing means (col. 13, lines 9-35). Liu discloses the solid freeform fabrication system of claim 30, wherein said curing means comprises a heater (col. 13, lines 36-53). Liu discloses the solid freeform fabrication system of claim 30, wherein said curing means comprises a UV radiation applicator (col. 13, 36-53). Liu

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discloses the object of claim 37, wherein said non-reactive powder was spread in bulk onto a substrate prior to receiving said reactive resin (col. 14, lines 1-5).

Referring to claim 45, Liu discloses a processor readable medium having instructions thereon for: receiving data corresponding to a SFF build operation (col. 1, lines 45-67); causing a roller to spread and pack a layer of non-reactive powder on a substrate (col. 14, lines 1-5); selectively firing a curable resin from a dispenser onto said non-reactive powder (col. 17, lines 38-56); and curing said curable resin (col. 17, lines 38-56).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles R Kasenge whose telephone number is 571 272-3743. The examiner can normally be reached on Monday through Friday, 8:30 - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard can be reached on 571 272-3749. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

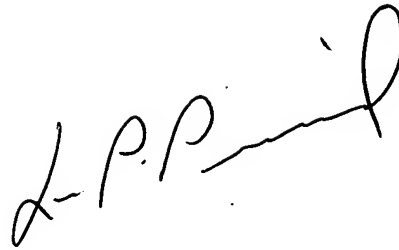
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CK

March 16, 2005

A handwritten signature in black ink, appearing to read 'L. P. Picard', with a stylized flourish at the end.

LEO PICARD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100